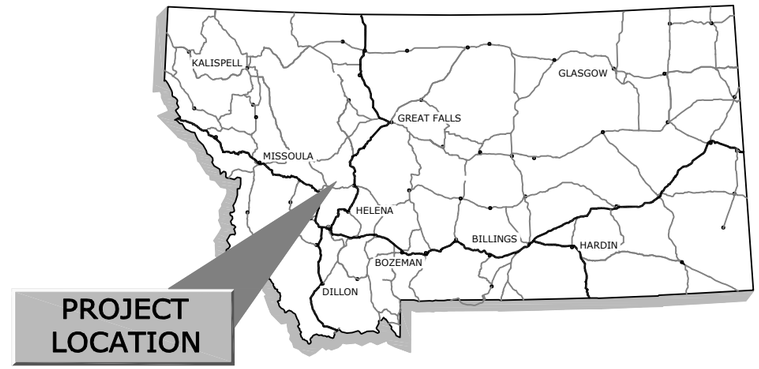
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE, REGION 1

ROAD AND CULVERT PLANS FOR:

GLEASON CREEK CULVERT REPLACEMENT

NEVADA CREEK ROAD NFSR 296, MP 6.0

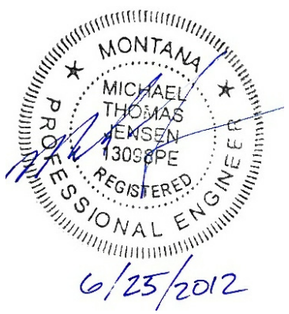
HELENA NATIONAL FOREST
POWELL COUNTY, MONTANA

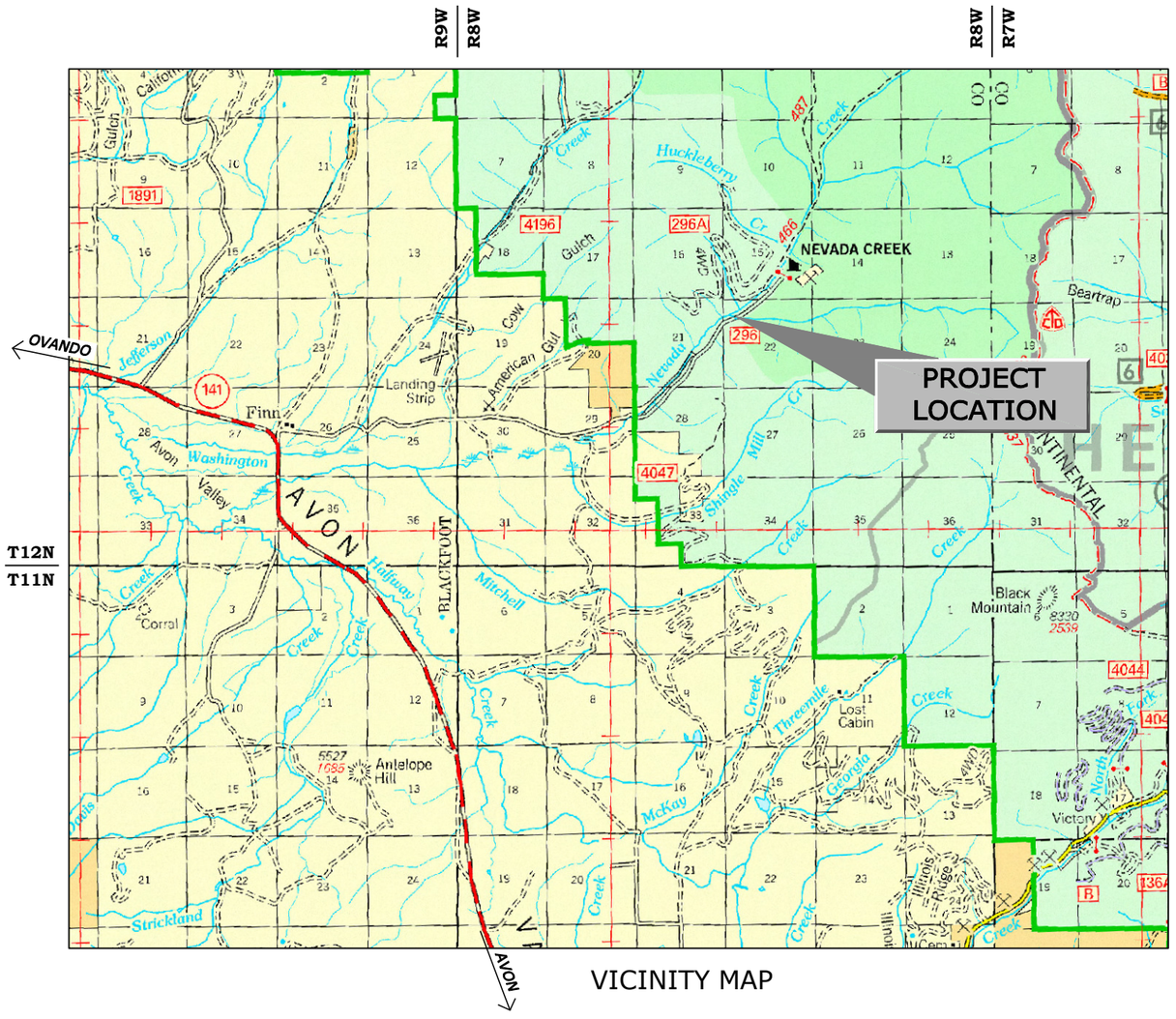


LOCATION MAP

INDEX TO SHEETS	
NO.	**DESCRIPTION**
1	TITLE SHEET
2	SUMMARY OF QUANTITIES & GENERAL NOTES
3	ROAD TYPICAL SECTION
4	ROAD PLAN & PROFILE
5	CULVERT LAYOUT
6	CULVERT DETAILS
7	STREAM DETAILS
8	MISCELLANEOUS DETAILS
9	STREAM DIVERSION PLAN
XS1 - XS4	ROADWAY CROSS SECTIONS

MATERIAL SOURCES
GOVERNMENT SUPPLIED:
WASTE SITE
CONTRACTOR SUPPLIED:
CRUSHED AGGREGATE SURFACING
RIPRAP





VICINITY MAP

RECOMMENDED:

_____ DATE _____
DISTRICT RANGER
LINCOLN RANGER DISTRICT

REVIEWED:

_____ DATE _____
FOREST ENGINEER
HELENA NATIONAL FOREST

APPROVED:

_____ DATE _____
FOREST SUPERVISOR
HELENA NATIONAL FOREST

DJ&A, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 RUSSELL STREET, MISSOULA, MONTANA 59801-8591
PHONE 406/721-4320 FAX 406/549-6371

SUMMARY OF ESTIMATED QUANTITIES

ITEM NO.	ITEM DESCRIPTION	MEASUREMENT		GLEASON CREEK CULVERT		PROJECT TOTAL
		METHOD	UNIT			
15101	MOBILIZATION	LSQ	Lump Sum	1		1
15713	SOIL EROSION AND POLLUTION CONTROL	LSQ	Lump Sum	1		1
15722	STRAW/HAY WATTLE, CERTIFIED WEED FREE	AQ	Linear Foot	300		300
20304	REMOVAL OF EXISTING 48" CORRUGATED STEEL PIPE CULVERT	LSQ	Lump Sum	1		1
20420	DRAINAGE EXCAVATION, TYPE DRAIN DIP	AQ	Each	1		1
20806	STRUCTURE EXCAVATION	LSQ	Lump Sum	1		1
251011A	PLACED RIPRAP, CLASS 3, MACHINE PLACED (COMMERCIAL SOURCE)	CQ	Cubic Yard	25		25
251011B	PLACED RIPRAP, CLASS 4, MACHINE PLACED (COMMERCIAL SOURCE)	CQ	Cubic Yard	36		36
25150	GRADE CONTROL STRUCTURES (ROCK WEIR STEP POOL) (COMMERCIAL SOURCE)	AQ	Each	4		4
30809	CRUSHED AGGREGATE, SURFACING (COMMERCIAL SOURCE)	CQ	Cubic Yard	45		45
60202	INSTALL OWNER-FURNISHED 137" SPAN X 87" RISE CS PIPE-ARCH, 0.138" THICKNESS	AQ	Linear Foot	56		56
62201	EQUIPMENT RENTAL, HYDRAULIC EXCAVATOR WITH THUMB	AQ	Hour	8		8
62202	EQUIPMENT RENTAL, LARGE DUMP TRUCK	AQ	Hour	8		8

CQ = Contract Quantity; LSQ= Lump Sum Quantity; AQ= Actual Quantity

GENERAL NOTES

DESIGN: *This structure is designed for HL-93 live loading in accordance with AASHTO LRFD Bridge Design Specifications, 5th edition, 2010.*

HYDROLOGY AND HYDRAULICS: *This structure has been designed to pass a flood of 126 cfs (Q100) with a Headwater Depth to Culvert Rise ratio less than 1.*

SPECIFICATIONS: *Construct the project in compliance with Federal Highway Administration Standard Specifications for Construction of Road and Bridges on Federal Highway Projects (FP-03) and applicable Forest Service Supplemental Specifications.*

EROSION CONTROL PLAN: *Submit a soil erosion plan to the Contracting Officer for approval at least seven (7) days prior to beginning work. See Section 157 of the Supplemental Specifications for details. Construct temporary means to divert the flow of the live stream as necessary to perform work. Do not pump water from excavations directly into the live stream.*

CONSTRUCTION STAKING: *The Government will provide construction staking for this project. Any re-staking required will be at the Contractor's expense.*

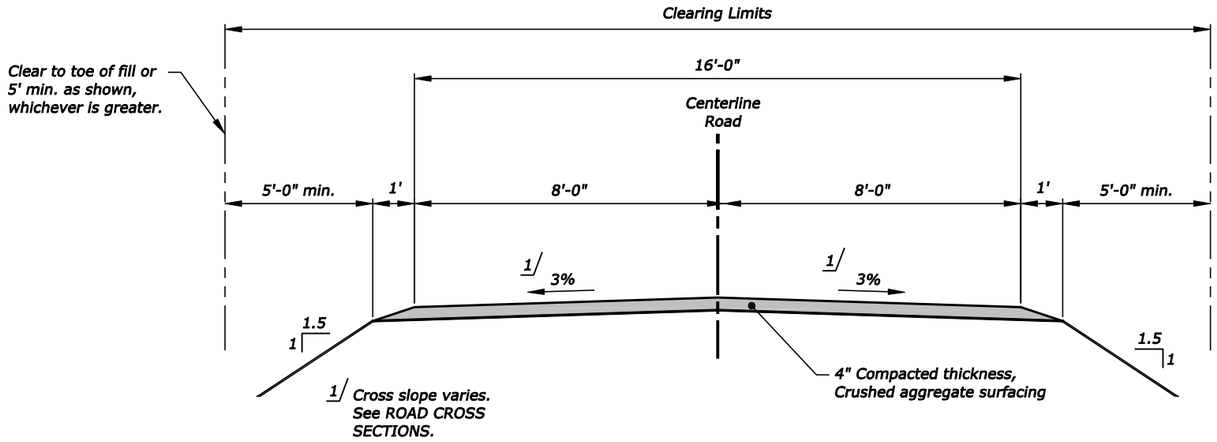
DISPOSAL: *All materials designated for removal become the property of the Contractor and are to be disposed of by removing from site in an environmentally safe manner in accordance with all Local, State and Federal requirements.*

TEMPORARY TRAFFIC CONTROL: *Submit a Temporary Traffic Control Plan to the Contracting Officer for approval at least 30 days prior to intended use.*

HARDWARE AND STRUCTURAL STEEL: *Use shapes, plates and bars meeting the requirements of ASTM A36, unless otherwise specified in these plans. Use hardware meeting the requirements of ASTM A325, except as noted in the drawings. Galvanize hardware in accordance with AASHTO M232 (ASTM A153) unless otherwise noted.*

WELDING: *Weld in accordance with the Structural Welding Code, AWS D1.1. A certified welder is required.*

OWNER-FURNISHED MATERIALS: *The Big Blackfoot Chapter of Trout Unlimited will furnish the 137" span x 87" rise pipe-arch to the Contractor. Refer to Section 602 of the Forest Service Supplemental Specifications.*



TYPICAL ROADWAY SECTION

Not to Scale

CONTROL POINT TABLE				
POINT #	ELEVATION	NORTHING	EASTING	DESCRIPTION
CP-1	4000.33	9884.18	9751.62	SET- RPC
CP-2	3998.44	9901.73	9904.71	SET- RPC
CP-3	4000.00	10000.00	10000.00	NAIL
CP-4	4010.56	10137.85	10073.07	SET- RPC
CP-5	4012.57	10298.16	10280.58	SET- RPC
CP-6	3982.44	10053.82	9875.27	NAIL
CP-7	4001.75	9889.09	10172.46	NAIL

** COORDINATE SYSTEM IS LOCAL **

CENTERLINE POINTS					
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION	
5000	9921.2895	9927.0394	3998.70	STA 21+00	
5001	9931.0920	9944.4622	3998.74	STA 21+20	
5002	9942.6449	9960.7770	3998.79	STA 21+40	
5003	9955.8241	9975.8086	3998.83	STA 21+60	
5004	9970.4882	9989.3956	3999.12	STA 21+80	
5005	9986.4797	10001.3921	3999.84	STA 22+00	
5006	9990.0496	10003.7346	4000.05	STA 22+04.27	CL CULVERT
5007	10003.6268	10011.6692	4000.99	STA 22+20	
5008	10004.7150	10012.2426	4001.08	STA 22+21.23 PT	
5009	10021.3488	10020.9390	4002.35	STA 22+40	
5010	10039.0726	10030.2054	4003.70	STA 22+60	
5011	10056.7965	10039.4717	4005.05	STA 22+80	
5012	10074.5203	10048.7380	4006.40	STA 23+00	

LEGEND

- Existing Edge of Road
- Existing Edge of Shoulder
- Existing Culvert
- Existing Edge of Water
- Existing Ditch
- 6000 Major Contour (5')
- Minor Contour (1')

LAYOUT POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
6000	10007.9633	9980.8110	3983.28	Downstream Layout
6001	9973.5228	10024.8816	3986.04	Upstream Layout

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HELENA NATIONAL FOREST
HELENA, MT

GLEASON CREEK CULVERT REPLACEMENT

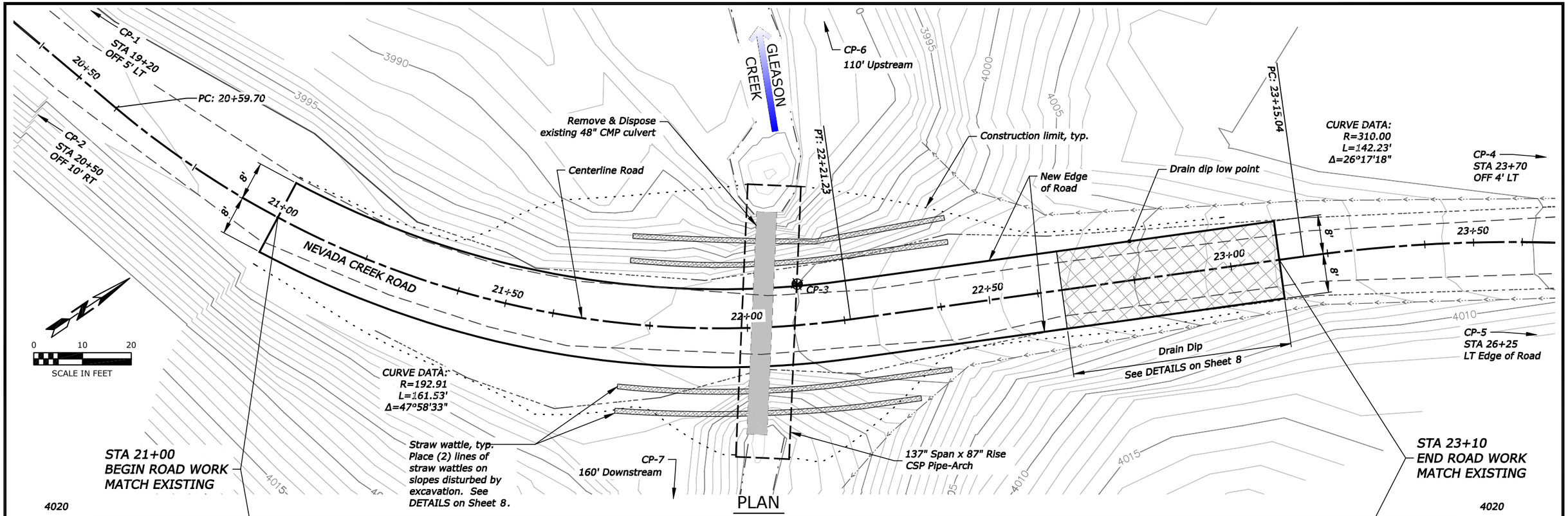
TYPICAL SECTIONS AND POINT COORDINATE TABLES

DESIGNED: M. Jensen DATE
DRAWN: K. Gauthier DATE
CHECKED: C. Thompson DATE
REVIEWED: DATE

DATE	REVISION	BY

FILENAME:

SHEET 3



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HELENA NATIONAL FOREST
HELENA, MT

GLEASON CREEK CULVERT REPLACEMENT

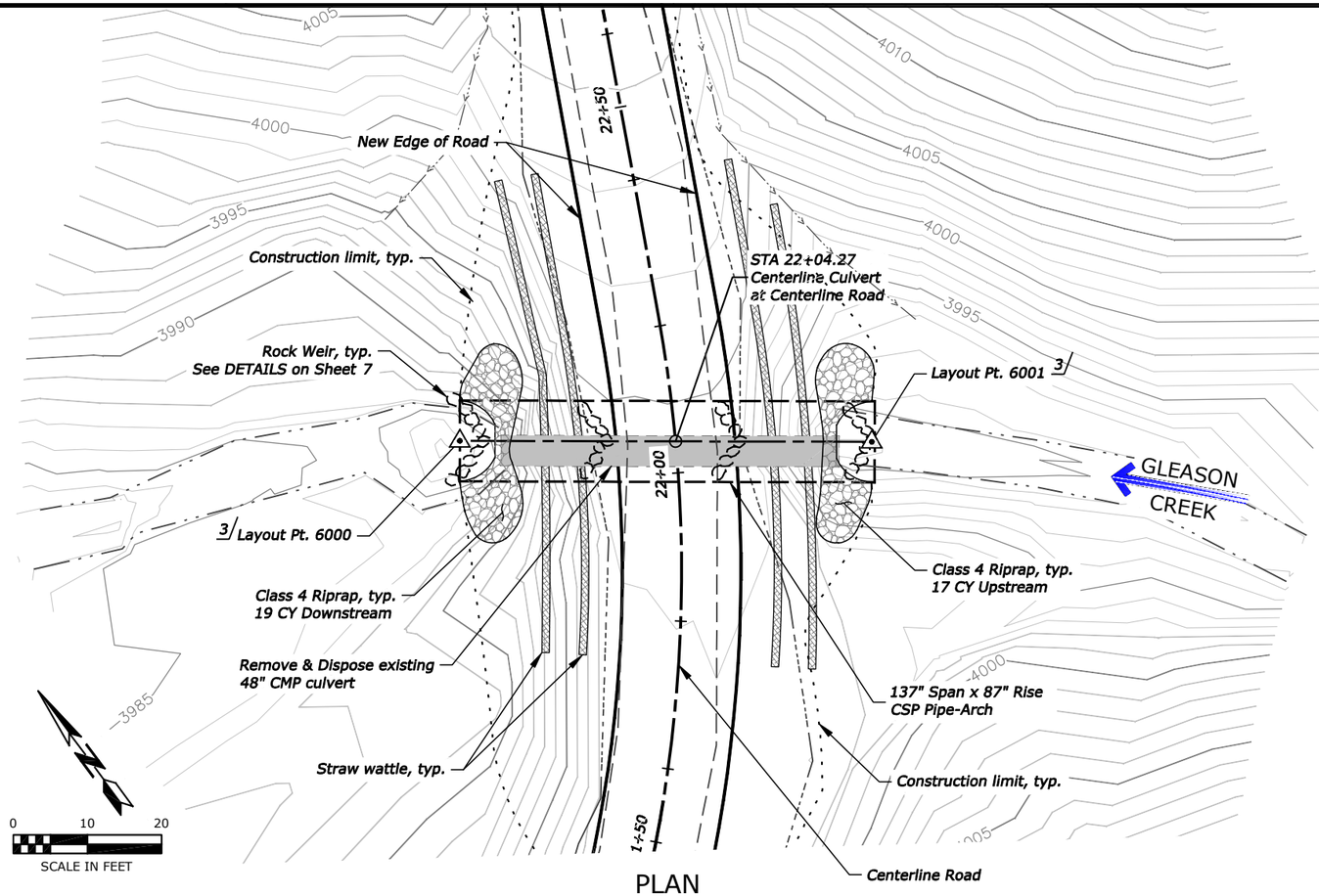
ROADWAY PLAN & PROFILE

DESIGNED:	M. Jensen	DATE
DRAWN:	K. Gauthier	DATE
CHECKED:	C. Thompson	DATE
REVIEWED:		DATE

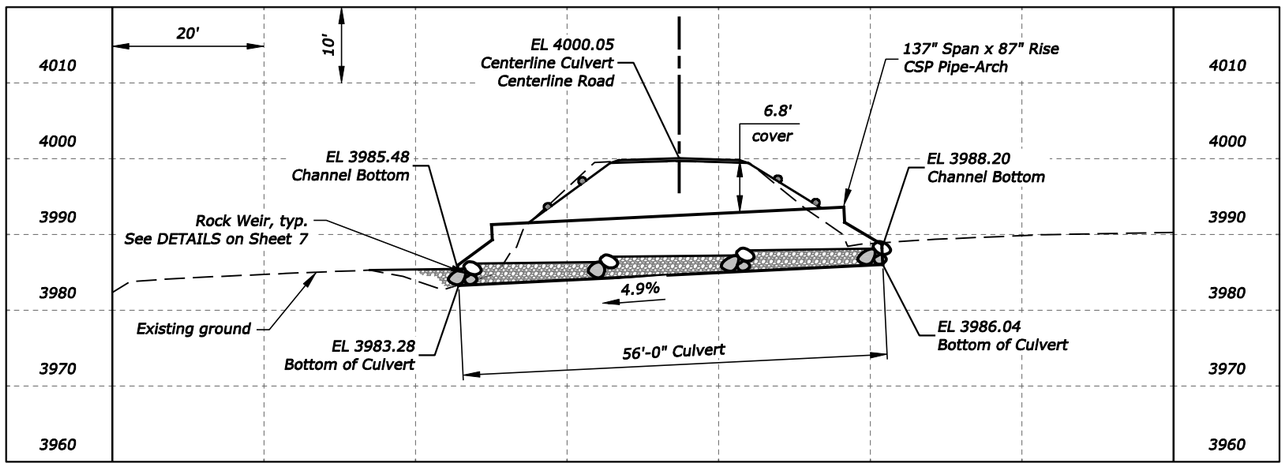
DATE	REVISION	BY

FILENAME:

SHEET 4



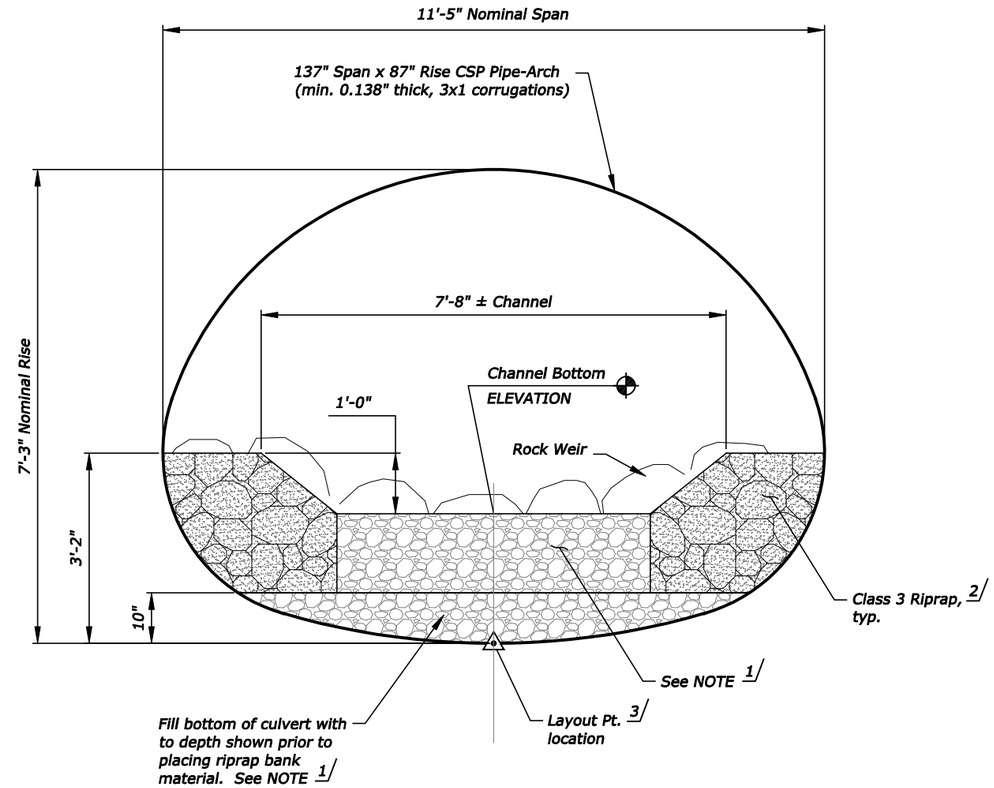
PLAN



SECTION THRU CENTERLINE CULVERT

Scale: 1" = 20'

See Sheet 7 for additional stream details



TYPICAL SECTION

Scale: Not to Scale

HYDRAULIC DATA:
Q2= 28 cfs
Depth= 1.5'
Bankfull Width= 9.2'

Q100= 126 cfs
Depth = 2.6'

1/ *Fill culvert bottom with a native material preserved from excavation that of similar gradation to material in the natural channel. Final material should be well-graded to produce a dense, well interlocked bed with low permeability. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT THE STREAM FLOW DOES NOT GO SUBSURFACE THROUGH THE CULVERT FOR A 48 HOUR PERIOD AFTER RE-WATERING.*

2/ *Mix fine native material with imported riprap as directed by CO during placement of riprap to seal voids. Ensure fine material is dispersed throughout the full riprap section.*

3/ *See Sheet 3 for layout point coordinates.*

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HELENA NATIONAL FOREST
HELENA, MT

GLEASON CREEK CULVERT REPLACEMENT

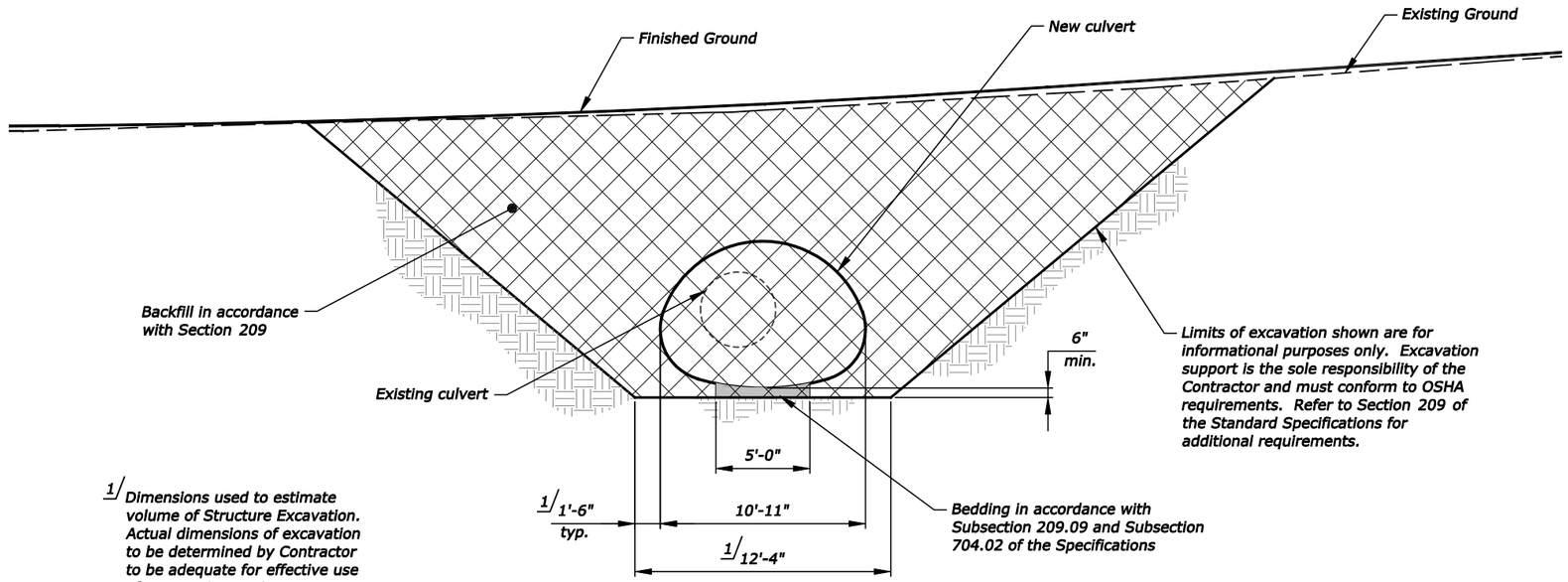
CULVERT LAYOUT

DESIGNED:	M. Jensen	DATE	
DRAWN:	K.Gauthier	DATE	
CHECKED:	C. Thompson	DATE	
REVIEWED:		DATE	

DATE	REVISION	BY

FILENAME:

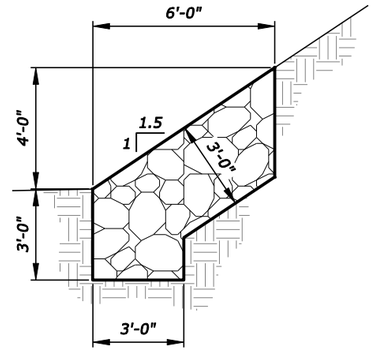
SHEET 5



TYPICAL CULVERT INSTALLATION DETAIL

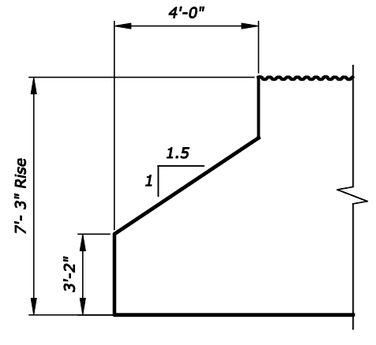
Not to Scale

STRUCTURE EXCAVATION NOTE:
Structure excavation is paid by the Lump Sum under Item 20806. For information only, the volume of excavation is estimated to be 680 CY, as represented by the cross-hatched area shown in the detail above. The actual quantity of excavation will depend on the Contractor's operations. It is the responsibility of the contractor to accurately estimate the volume of excavation required to safely construct the project as shown in these PLANS.



RIPRAP DETAIL *OUTSIDE OF CULVERT*

Not to Scale



CULVERT END BEVEL

Not to Scale

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HELENA NATIONAL FOREST
HELENA, MT

GLEASON CREEK CULVERT REPLACEMENT

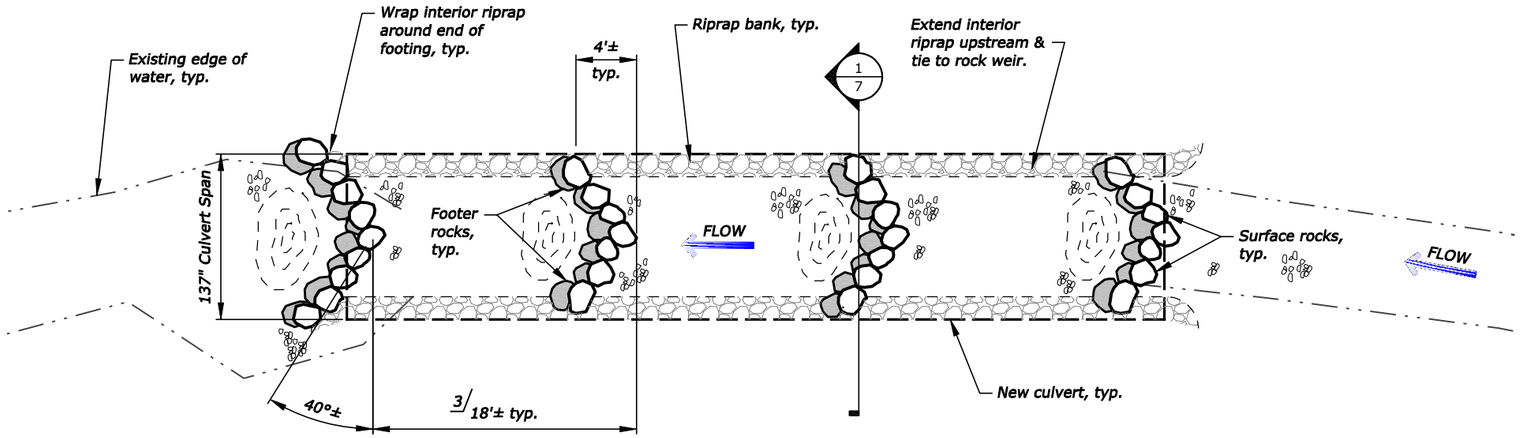
CULVERT DETAILS

DESIGNED:	M. Jensen	DATE
DRAWN:	K. Gauthier	DATE
CHECKED:	C. Thompson	DATE
REVIEWED:		DATE

DATE	REVISION	BY

FILENAME:

SHEET 6

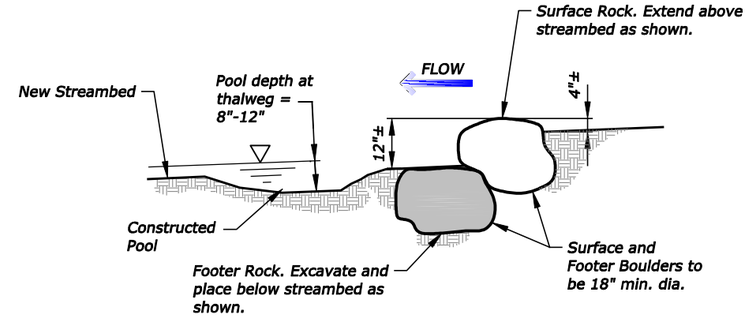


3/ The spacing and configuration of rock weirs may be adjusted in the field by the CO to fit the actual streambed conditions.

ROCK WEIR PLAN

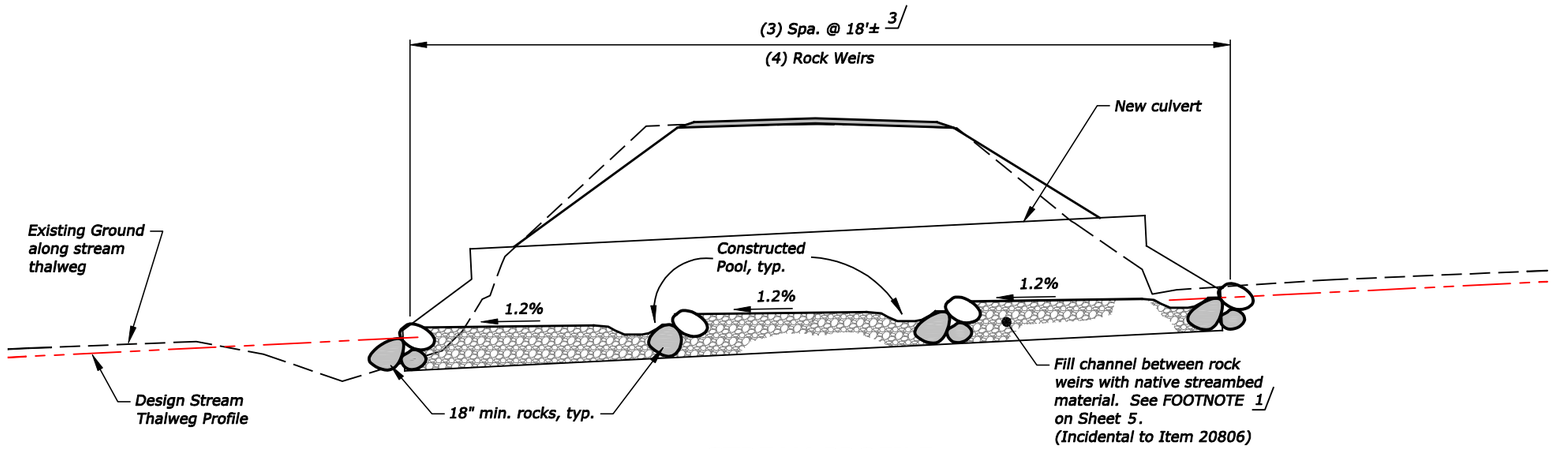
Not to Scale

NOTE: Place surface and footer rocks close together, minimizing any gaps between adjacent rocks.



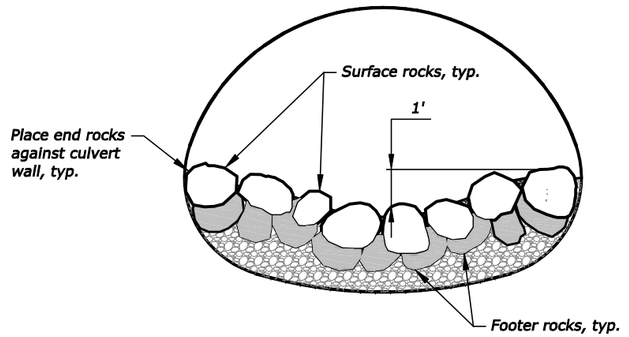
ROCK WEIR DETAIL

Not to Scale



STREAM PROFILE

Not to Scale



1/7 **SECTION** *WEIRS INSIDE CULVERT*

Not to Scale

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FOREST SERVICE
HELENA NATIONAL FOREST
HELENA, MT

GLEASON CREEK CULVERT REPLACEMENT

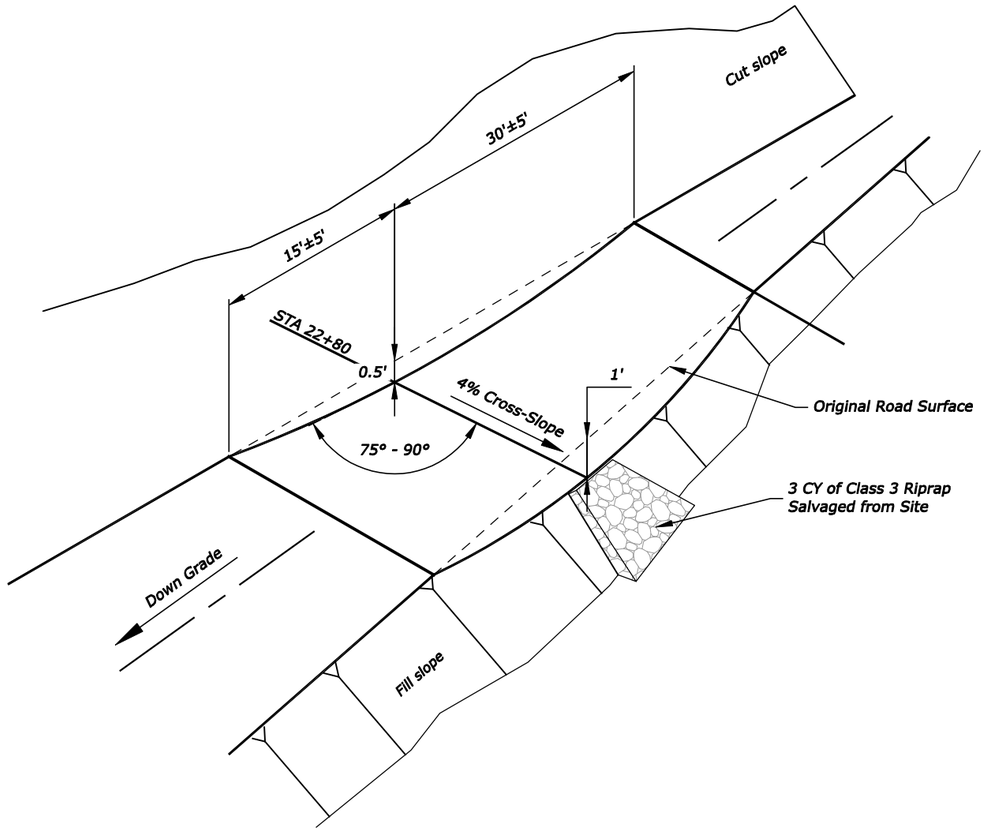
STREAM DETAILS

DESIGNED:	M. Jensen	DATE	
DRAWN:	K. Gauthier	DATE	
CHECKED:	C. Thompson	DATE	
REVIEWED:		DATE	

DATE	REVISION	BY

FILENAME:

SHEET 7

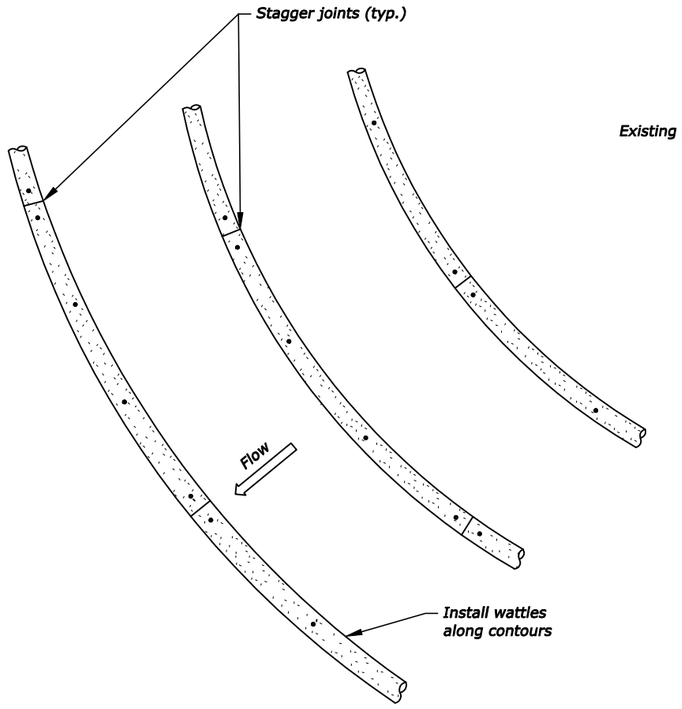


DRAIN DIP DETAIL

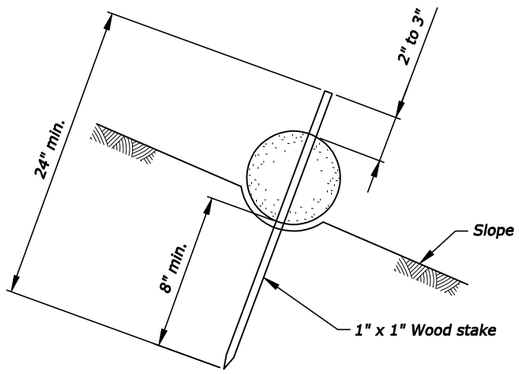
Not to Scale

DRAIN DIP NOTES

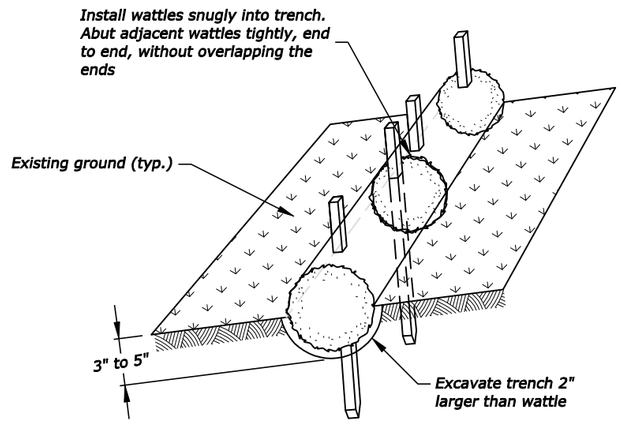
1. *Construct Dips in the subgrade prior to placement of any specified surfacing course.*
2. *Have CO approve Dip location prior to construction.*
3. *Uniformly spread suitable excess material on the adjacent roadbed. Do not sidecast on the Fill Slope.*



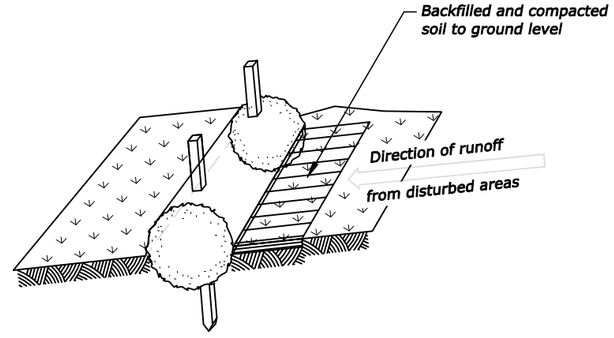
INSTALLATION ALONG SLOPES



WATTLE STAKING



Step 1: Excavate trench and install wattles



Step 2: Backfill soil against wattles

PROPERLY STAKED AND ENTRENCHED WATTLE

STRAW WATTLE NOTES:

1. *Drive stakes at each end and at 4' spacing until wattle is secure to slope. Do not crush wattle while staking. Live stakes may be used for permanent installations.*
2. *Use drainage ditch installation only in low flow conditions.*

STAKES REQUIRED	
Wattle length (ft)	*Stakes required for each wattle*
25	*8*
20	*6*
12	*4*

STRAW WATTLE DETAILS

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HELENA NATIONAL FOREST
HELENA, MT

GLEASON CREEK
CULVERT REPLACEMENT

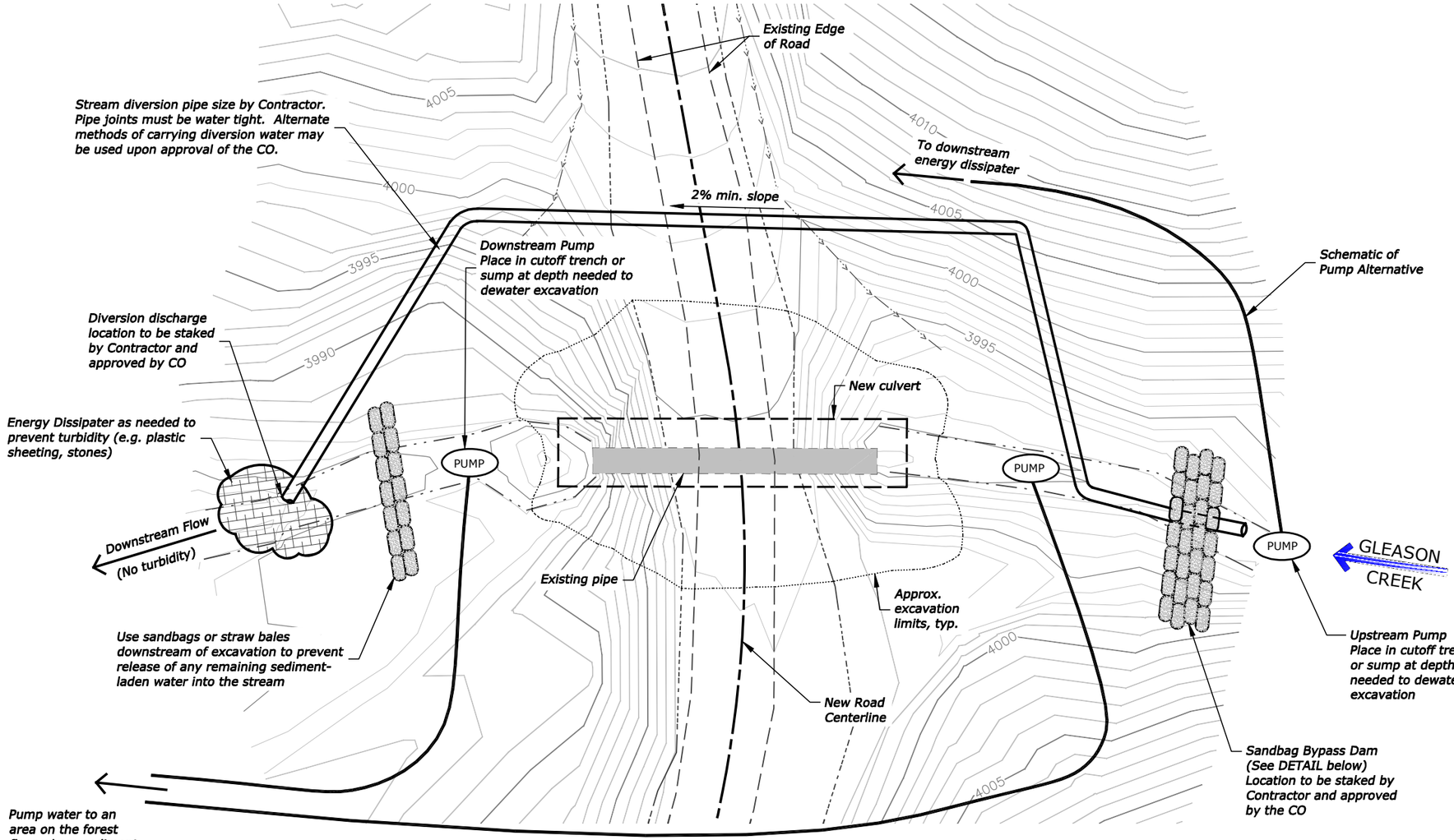
MISCELLANEOUS DETAILS

DESIGNED:	M. Jensen	DATE
DRAWN:	K. Gauthier	DATE
CHECKED:	C. Thompson	DATE
REVIEWED:		DATE

DATE	REVISION	BY

FILENAME:

SHEET 8



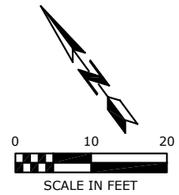
PLAN

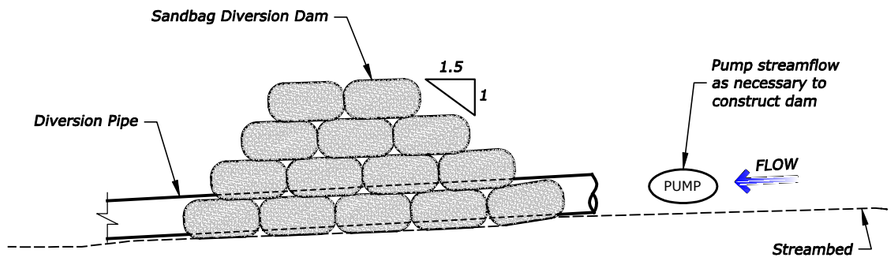
NOTES:

1. *THE PLAN SHOWN HERE ILLUSTRATES THE GENERAL REQUIREMENTS FOR STREAM DIVERSION AND IS NOT INTENDED TO SUPERSEDE REQUIREMENTS OF THE SPECIFICATIONS.*

2. *CONTRACTOR TO DETERMINE FINAL METHODS AND LOCATION OF STREAM DIVERSION, DETAIL THAT INFORMATION IN A EROSION CONTROL PLAN AND SUBMIT THAT PLAN TO THE CO FOR APPROVAL PRIOR TO ANY WORK, AS STATED IN THE GENERAL NOTES ON SHEET 2 AND IN THE SPECIFICATIONS.*

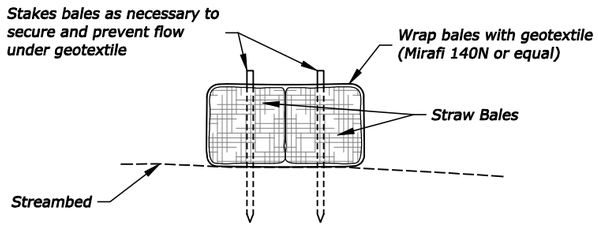
3. *ALTERNATE METHODS OR CONFIGURATIONS MAY BE EMPLOYED BY THE CONTRACTOR PROVIDED THE GENERAL REQUIREMENTS ARE MET.*





SANDBAG DIVERSION DAM

Not to Scale



STRAW BALE DAM

Not to Scale

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
HELENA NATIONAL FOREST
HELENA, MT

GLEASON CREEK CULVERT REPLACEMENT

STREAM DIVERSION SCHEMATIC

DESIGNED:	M. Jensen	DATE
DRAWN:	K. Gauthier	DATE
CHECKED:	C. Thompson	DATE
REVIEWED:		DATE

DATE	REVISION	BY

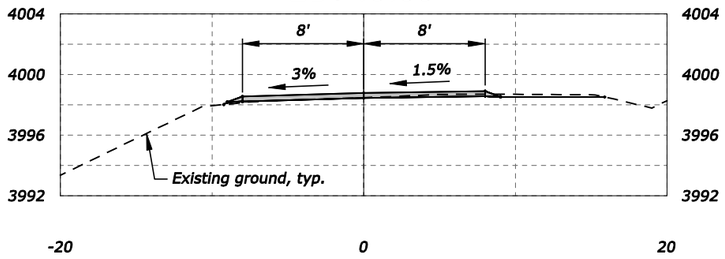
FILENAME:

SHEET 9

GLEASON CREEK CULVERT
NEVADA CREEK ROAD
ROAD CROSS SECTIONS

PREPARED BY :
DJ&A, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 Russell Street, Missoula, Montana 59801-2691
Phone 406/721-4320 Fax 406/549-8371

21+40.00



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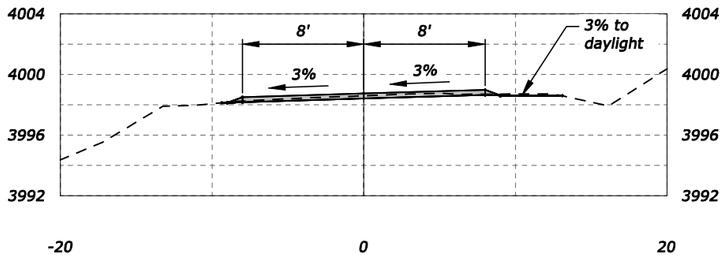

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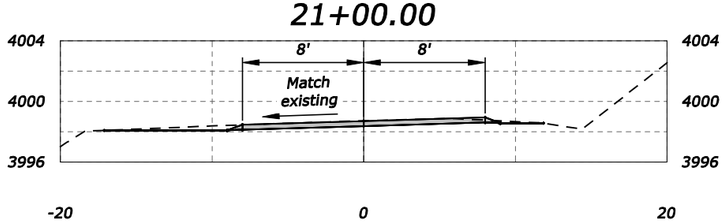

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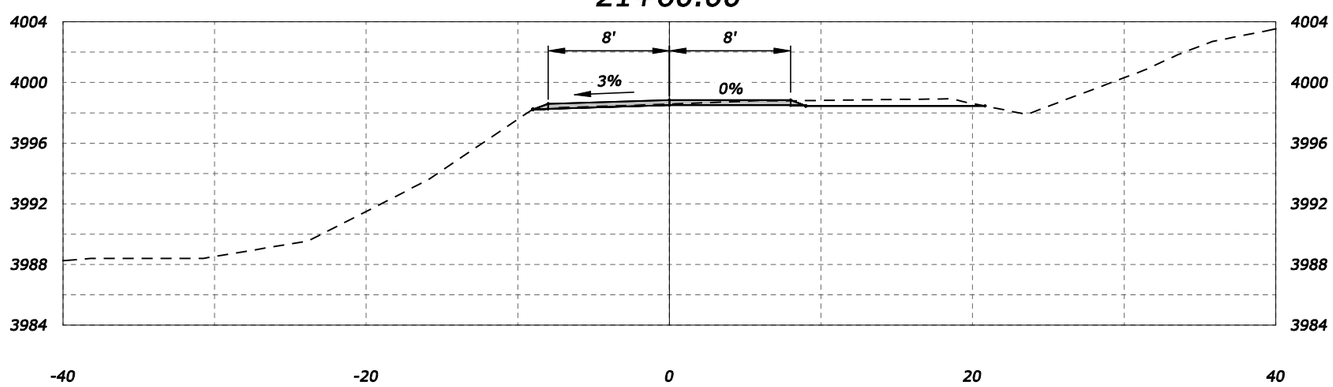
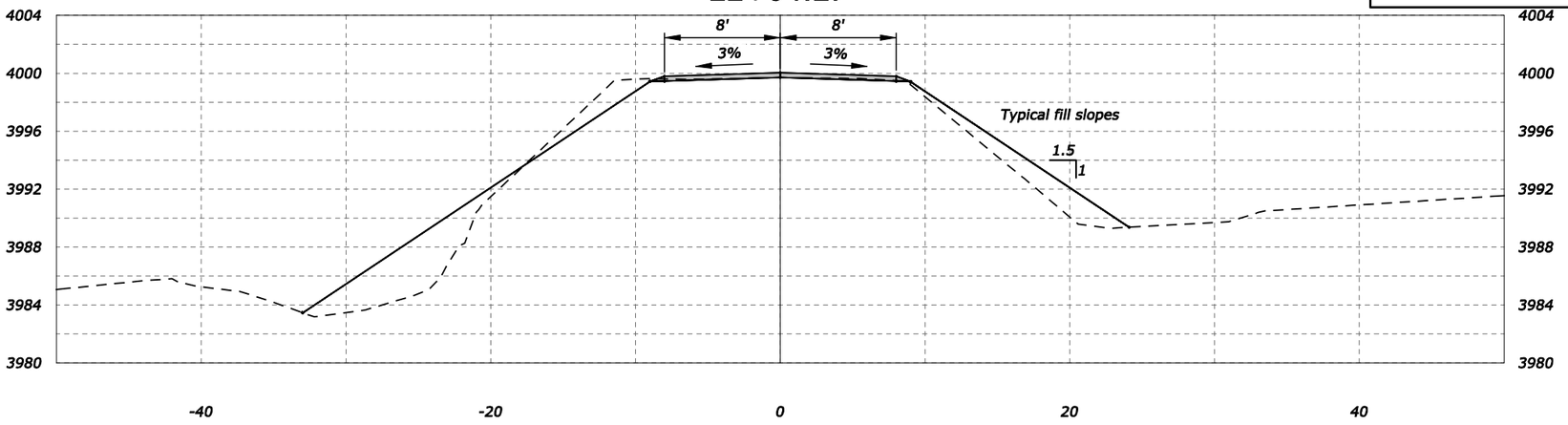


GLEASON CREEK CULVERT
NEVADA CREEK ROAD
ROAD CROSS SECTIONS

PREPARED BY :
DJ&A, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
3203 Russell Street, Missoula, Montana 59801-2091
Phone 406/721-4320 Fax 406/549-8371

22+04.27



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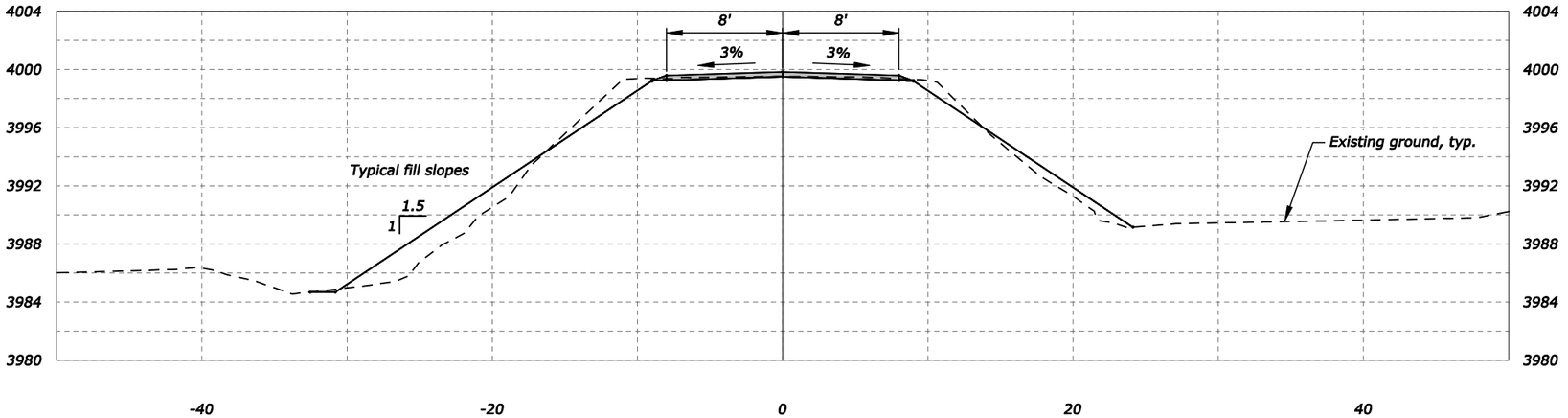
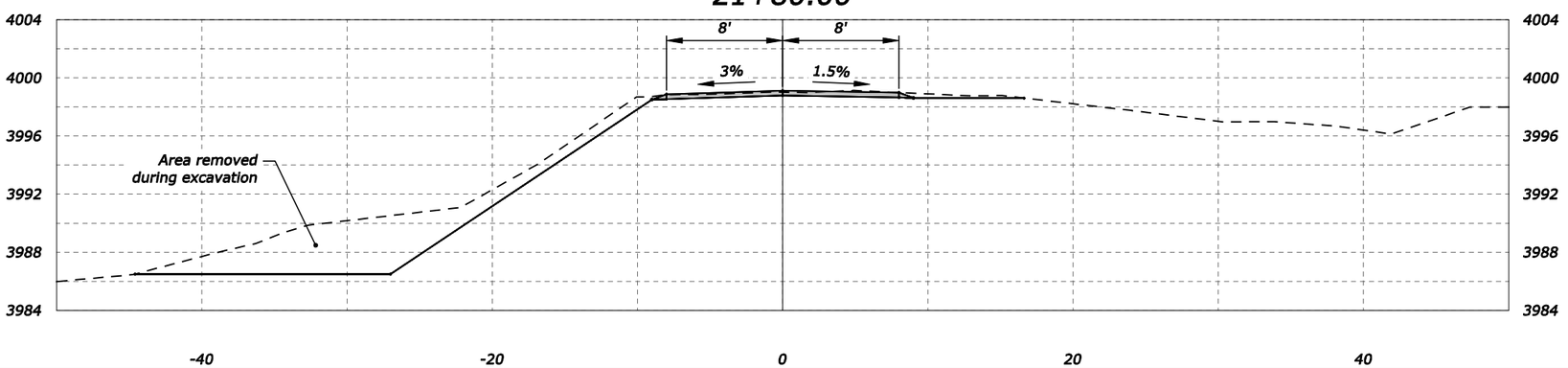


21+80.00



GLEASON CREEK CULVERT
NEVADA CREEK ROAD
ROAD CROSS SECTIONS

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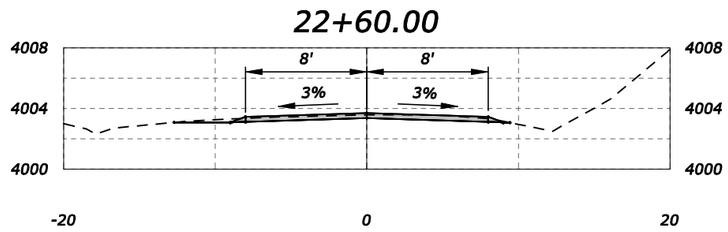

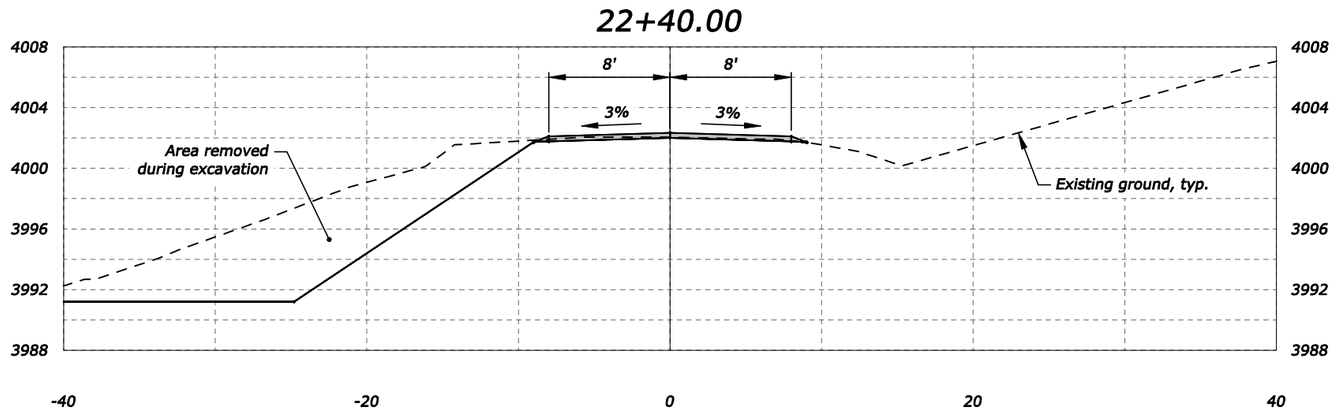

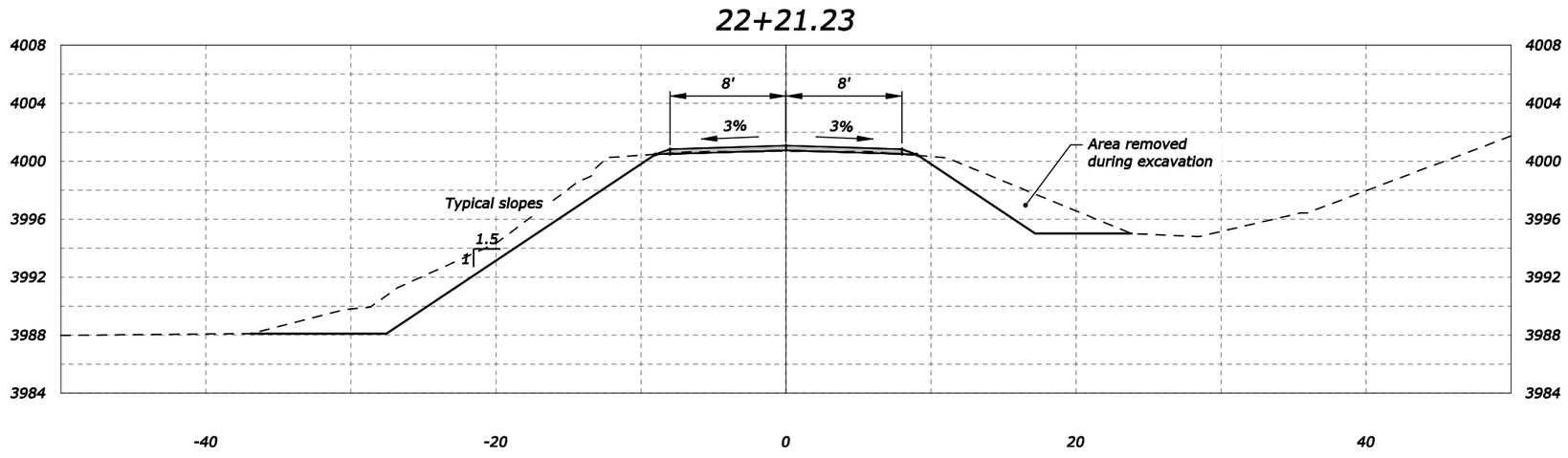

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